SW

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
REGION 8
999 18TH STREET- SUITE 300
DENVER, CO 80202-2466
Phone 800-227-8917
http://www.epa.gov/region08

Ref: EPR-F

June 6, 2005

Mr. John Rampe
Director, Project Management Division
U.S. Department of Energy, Rocky Flats Project Office
10808 Highway 93, Unit A
Golden, CO 80403-8200

RE: Draft Comprehensive Risk Assessment – Volume 5, Risk Assessment for the Inter-Drainage Exposure Unit, dated May 2005

Dear Mr. Rampe,

EPA has completed a review of the Draft CRA for the Inter-Drainage Exposure Unit, dated May 2005. In general, the document is well-written and clearly organized. There are no specific comments on the Human Health section of the document, however, there continue to be several comments related to the use of Professional Judgment and selection of the Ecological Chemicals of Potential Concern (ECOPCs) associated with the ecological risk portion of the document.

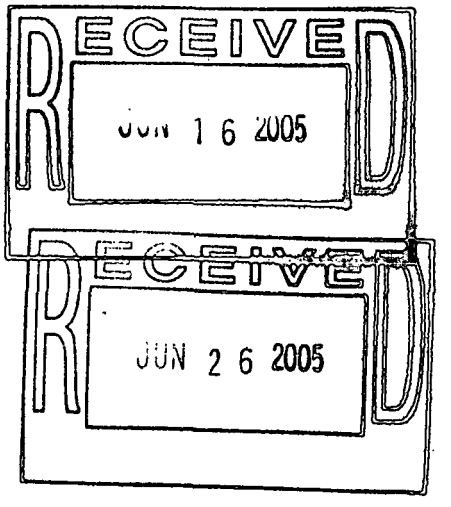
If you have any questions concerning these comments, please contact Robyn Blackburn of the EPA Rocky Flats Team at 303-312-6663.

Sincerely,

C. Mark Aguilar
Rocky Flats Project Manager
Environmental Protection Agency

Enclosure

cc: Scott Surovchak, DOE/LM
Steve Gunderson, CDPHE
Mark Sattelberg, USF&WS
Dave Shelton, K-H
Administrative Record, T130G



ADMIN RECORD

SW-A-005149

1/14

EPA Technical Review Comments on the Draft Comprehensive Risk Assessment (CRA)
Volume 5 – Inter-Drainage Exposure Unit
dated May 2005

The Draft CRA for the IDEU is generally well-written and clearly organized, and it is clear that previous comments on the West Area EU have been incorporated into the IDEU document. However, as indicated in the following comments, there are several remaining issues which require further consideration.

Sections 2.0 through 6.0, Human Health Selection of Chemicals of Concern and Assessment: EPA has reviewed the human health risk assessment sections and has no comments. The human health assessment was conducted in accordance with the guidelines laid out in the Comprehensive Risk Assessment Methodology for the Rocky Flats Site.

The following comments are related to Section 7.0, Identification of Ecological Contaminants of Potential Concern:

GENERAL COMMENTS

1. Identification of Chemicals of Potential Ecological Concern

The document contains an elaborate Professional Judgment section which is used to eliminate all chemicals that fail the initial screen (i.e., Maximum Detected Concentration is greater than Ecological Screening Level, and Detection Frequency greater than 5%, and Site data are statistically greater than RFETS background data). The Professional Judgment section also includes a risk characterization section to document why these chemicals should not be identified as an Ecological Chemicals of Potential Concern (ECOPCs). The use of the Professional Judgment section is intended to reduce the number of ECOPCs that are brought through the risk assessment process as to focus efforts on those ECOPCs that require a more detailed review. Currently, the Professional Judgment sections for these Ecological Chemicals of Interest (ECOIs) have already presented a detailed risk assessment for each of the chemicals that are proposed for elimination. EPA recommends that a higher level of scrutiny be placed on retaining those chemicals with any known historical use at the site. The ECOPCs can then include a risk calculation (e.g., using the 95% UCL on the mean) to provide additional documentation as to whether there are ecological risks. EPA requests that any ECOIs that are found to be statistically higher than background and which have one or more lines of evidence that indicate a potential for the ECOI to be a ECOPC, be carried forward through the remainder of the screening process as outlined in the CRA Methodology. EPA believes that the results of the additional screening process adds another line of evidence and will support the results of the currently written risk characterization section to support conclusions regarding the potential for ecological risks.

Based on the information presented in the Professional Judgment section for ecological receptors, EPA believes that antimony and molybdenum should be retained and carried through the remainder of the screening process to assess whether they should be considered ECOPCs.

2

2. Data Adequacy Assessment, Non-PMJM

Section 1.2 accurately presents the summary of the conclusions presented in Volume 2. However, as stated previously in comments on CRA Volume 2 (Appendix C), with the exception of radionuclides and metals in surface soil, the data sets for all other analyte suites do not meet minimal requirements for the purposes of conducting meaningful quantitative risk assessment. EPA recommended that Volume 2 be revised to include other relevant lines of evidence to support the conclusion that no additional samples are needed. Once these changes have been incorporated into Volume 2, the data adequacy assessment conclusions presented in Section 1.2 will need to be revised accordingly. This section should include a summary of the data adequacy conclusions from Volume 2, as well as a brief summary of the potential limitations, assumptions, and biases of the available data sets. For example, the text might take a form similar to the following:

For radionuclides and metals, at least one surface soil sample is available per 30-acre grid cell. The total number of samples, spatial distribution, and temporal distribution are adequate for the purposes of risk assessment.

For SVOCs and VOCs, only 3 surface soil samples are available from within the IDEU. The samples were all collected post-2001 and all are in close proximity to each other. It is noted that the total number of samples is likely too low to provide meaningful statistics and the samples do not provide good spatial or temporal representativeness, use of these data sets for the purposes of quantitative risk assessment is highly uncertain. However, an evaluation of {add information on specific site use, historic releases, migration potential, historical data, other environmental data, spatial gradients} indicates that the locations sampled for SVOCs and VOCs represent the areas with the highest likelihood for these chemicals to be present. Therefore, no additional samples are needed. The COPC selection process will be performed using this limited data set.*

example given if it can be determined based on site-specific review of information.

3. Data Adequacy Assessment, Prebles Meadow Jumping Mouse (PMJM)

An evaluation of data adequacy in PMJM habitat areas is not included in the data adequacy assessment. As stated previously in comments on CRA Volume 2 (Appendix C), data adequacy rules established for non-Threatened & Endangered (T&E) species do not apply to PMJM because risk assessments for T&E species are based on the protection of individuals rather than populations. It appears that there are several habitat patches that extend into the IDEU. EPA agrees that habitat patches located along the border of the Rock Creek EU (#32, #5, #6, and #7) should be evaluated as part of the Rock Creek EU evaluation. However, habitat patches #31 and #9 that are primarily located within the IDEU need to be addressed as part of the IDEU. Because no surface soil data are available from within these habitat patches, the current surface soil data do not meet minimal data requirements to support risk assessment. Other lines of evidence can be used to support the conclusion that additional samples are not needed in these areas, or as needed, propose additional data to be collected in these areas. Incorporating adjacent surface soils and drainage sediments for these habitat

3

patches may allow informed risk management decisions without the collection of additional data.

4. Comparisons to Site-Specific Background

It appears that comparisons to background were not performed if the underlying site and/or background datasets had low detection frequency. While EPA agrees that a comparison to background should only be conducted if the underlying datasets are adequate to yield meaningful results, the approach for determining if the underlying datasets are adequate with regard to detection frequency is not presented. Please provide a description of when it was deemed inappropriate to perform a background comparison and why. Note that comparisons to background may be still be appropriate even when detection frequencies are low in the background data set depending upon the background detection limits achieved and the measured site levels (e.g., molybdenum in surface soil).

5. Professional Judgment Sections

The Professional Judgment sections are significantly improved compared to previous drafts. In general, these sections provide a systematic and consistent approach and conclusions are based on a line of evidence evaluation. The following comments seek to enhance these sections and help provide additional clarity. As indicated above, professional judgment should be primarily used if the ECOIs are not associated with historical site use.

Process Knowledge

It is not clear if the ChemRisk reports, Closeout Reports, and No Further Action (NFA) referenced in the ECOI-specific sections addressed potential risks to both human and ecological receptors. In several cases, NFAs were approved based on evaluation of human health risks ONLY, and the final NFA approval was deferred based on the results of the ecological risk assessment. Each of these sections should clarify which receptors and pathways were evaluated. If ecological receptors were not included, these reports cannot be used as rationale in the professional judgment sections to support the conclusions for ecological receptors.

Pattern Recognition

According to the CRA Methodology, pattern recognition includes an assessment of inter-element correlations, geochemical similarities, correlations between element concentrations and other soil parameters (e.g., TSS, pH), as well as other elemental behavior patterns. However, this section contains no discussion of any of these elements. Rather, this section focuses solely on the comparison to other reference data sets (i.e., Western US soils from Shacklette and Boerngen 1984) and does not provide the results for any of these additional pattern recognition assessments. Because a comparison of IDEU surface soil concentrations to other alternate reference data sets is not part of the pattern recognition evaluation, it is recommended the professional judgement section include a new heading called "Comparisons with Western US Background Data" that covers this topic separately.

4

For many ECOIs, the conclusion in this section is that the "IDEU data fall within the range of the background data and that the distributions are very similar". Based on a review of the box plots for each ECOI, this statement is not supported for several ECOIs. For example, the background data set for antimony appears to range from about 0.2-0.5 mg/kg and more than 90% of all samples within the IDEU data set are above background (Figure 7.2). The IDEU data do not "fall within the range of background" and the two distributions are not "very similar". In fact, for most ECOIs in the professional judgment section, a more rigorous statistical comparison to the site-specific background has already determined that there is a 90% probability that the site data set is higher than the background data set. Please provide clarification on how one data set is judged to be similar or dissimilar to another and modify the ECOI-specific sections as appropriate.

Box and Whisker Plots

Inspection of the data used to generate the box and whisker plots appears to indicate that a different format has been used for the site data set and the background data set in all of the box plots presented in Section 7. More specifically, for the background data set, the whiskers appear to represent the minimum and maximum, while the whiskers represent the 10^{th} and 90^{th} percentiles for the site data. A format which represents the 10^{th} and 90^{th} percentile is preferred since it is easy to discuss and describe data comparisons using these parameters. The range from the minimum to the maximum is inherently unstable and of relatively low utility in comparing data sets. EPA recommends the use of the 10^{th} and 90^{th} percentiles for the whiskers is less vulnerable to random variation and hence more meaningful.

In the format used for site data, samples below the 10^{th} percentile or above the 90^{th} percentile are shown as dots. The text refers to these points as "outliers". This is not appropriate. Samples below the 10^{th} and above the 90^{th} are valid and should be included in the data evaluation unless a valid statistical test has been performed to demonstrate a specific point meets standard criteria for an outlier. Please review the box plots and revise to show the 10^{th} and 90^{th} percentiles, as defined in the footnotes of these figures.

6. <u>Use of Western US Soils</u>

The Professional Judgment section (Section 7.2.4) states that because "Colorado has highly variable terrain that changes quickly over short distances" it is more appropriate to use the Western US data set to "fully capture the correct background concentrations for Rocky Flats". However, EPA believes that this is exactly why the Western US data set is not as useful as site-specific background data sets. Because Colorado has such variable terrain, the use of a more localized reference data set for the purposes of comparing to the RFETS site is preferred. Please note that the comparison of site data with site-specific background data is to address the question of whether the observed on-site levels are elevated due to site activities, not whether on-site concentration levels occur naturally anywhere else in the Western US. It is likely that the Western US data set includes samples from locations that are not likely to be representative of conditions similar to the RFETS site. As such, the use of Western US soils as a justification for eliminating a chemical from further consideration is

5

viewed to have much less importance than the results obtained from the site-specific comparison. While comparisons to the Western US data set may be included as a line of evidence, EPA believes that the entire Western US data set is not optimal for making background comparisons.

Please clarify the term "Western US" which is used by Shacklette and Boerngen (1984) to describe all native soil samples in the United States collected west of the 96th meridian. The text should be revised to indicate whether the entire Western US data set (i.e., all states west of the 96th meridian) or whether a subset of the Western US data set, as defined by Shacklette and Boerngen, was used.

7. **Identification of Receptors of Concern**

The receptors of concern (ROCs) selected for the CRA are not clearly introduced or discussed in the document. It is recognized that the details of the selection process for the ROCs are included in the Methodology, and the Methodology is cited in this document, however, the risk assessment would benefit by adding a brief description of the specific ROCs and their associated exposure pathways. Although Table 7.1 is cited and includes the ROCs, the table is titled "Comparison of MDCs in Surface Soil to NOAEL ESLs for Terrestrial Plants, Invertebrates and Vertebrates", which does not clearly identify it as listing the ROCs. Since the identification of ROCs is an important element in the overall Ecological Risk Assessment process, it is recommended that ROCs be more clearly identified. It is recommended that the risk assessment be revised to include a specific ROC section which provides a brief introduction to the ROCs groups and how these ROCs groups are representative of the exposures at the site. In addition, please include a table specifically titled "Receptors of Concern" for the IDEU.

SPECIFIC COMMENTS

Executive Summary

1. This section may need to be revised after section modifications in the main text have been completed.

Section 1.0 Introduction

2. **Page 1, Section 1.0, Footnote:** The footnote indicates an "HI" (hazard index) will be calculated for ecological receptors. Please correct the statement to indicate that hazard quotients will be calculated (since the calculation of an HI for ecological receptors is not currently planned for the CRA).

3. **Page 2, Section 1.1, 1st paragraph:** Please clarify whether the Risk Evaluation reports and NFA documents presented in this section addressed potential risks to both human health and ecological receptors. Revise the document to include a brief summary of which receptors and pathways were included in these evaluations.

6

4. **Page 4, Section 1.1.4, 2nd paragraph:** The data set criteria listed (post-June 1991 and depth ≤ 8 feet) were not the only restrictions used to select the current data sets for the risk assessment. Please modify this paragraph to include the other types of data restrictions that apply (e.g., data were rejected by the validator, field duplicates) and reference Appendix A for a summary of which samples were excluded from the IDEU dataset and rationale for why they were excluded.

5. **Page 6, Section 1.2, Data Adequacy Assessment, second bullet:** The generalized statement contained in the second paragraph does not reflect an accurate assessment of the data adequacy. For example, PAC 000-501 included spraying the roadways in this EU with waste oil for dust suppression. Few samples were collected on the roadways and no samples were analyzed for PCBs (a potential chemical of concern associated with waste oil). The roadway is on land that will be transferred for public use, and the PAC is proposed as a future trail for use on the National Wildlife Refuge. Revise the section to include specific information on whether there have been appropriate data collected to represent chemical characteristics associated with all potential sources in the this EU (i.e., oil was characterized prior to use and no PCBs were detected; or all waste oils used came from well known operations that had no associated PCBs).

Section 7.0, Identification of Ecological Contaminants of Potential Concern

6. **Page 19, Section 7.0:** The text indicates that ECOIs are identified for surface/subsurface soils, and ECOIs for surface water and sediment will be assessed in Volume 15. Please clarify the text to indicate that The IDEU will evaluate the potential for terrestrial risk by assessing soil and subsurface soil ECOIs, and Volume 15 will evaluate aquatic risk by assessing surface water and sediment.

7. **Page 21, Section 7.2.2:** The conclusion should not be "frequency of detection was not further evaluated", it should be "no ECOIs were excluded based on the detection frequency evaluation".

8. **Page 22-24, Section 7.2.3:** The text throughout this section continually refers to Table C.2. This reference is incorrect and should be changed to Table C.5.

9. **Page 22-24, Section 7.2.3:** As stated in previous comments, a qualitative comparison using reported ranges (minimum - maximum) is not preferred, because maximum values are a very poor indicator of the nature of the underlying distribution and emphasis on a single value does not utilize all the relevant information available for the underlying distribution. In fact, this type of comparison may also be misleading (see EPA Specific Comment No. 21). Rather, these descriptive comparisons should utilize the box plots to make statements regarding the similarity/dissimilarity of the site and background data sets. For example, text similar to the following would be a more balanced way of advancing the argument: *"For chromium, more than 75% of all site samples are within the observed background range (Figure 7.5). The median values for the datasets are generally similar, and there is considerable overlap between the 10th-90th percentile*

7

ranges of the two data sets. In addition, the site average and standard deviation (13.7 ± 3.8 mg/kg), while slightly elevated, are generally similar to background (11.2 ± 2.8 mg/kg). Based on these data, it appears that differences between chromium in site and background soils are minor. Chromium is discussed further in the professional judgment section (Section 7.2.4)." (Note: This text was drafted based on a review of a revised box and whisker plot for chromium, per the comments in the "Box and Whisker Plots" section above.) It is recommended that similar language should replace the sentence "the practical significance of the difference between the IDEU and the background data sets is small" in the paragraphs for barium, chromium, lead, lithium, and manganese.

10. **Page 22-24, Section 7.2.3:** The text for aluminum, barium, lithium, and manganese all make reference to data "outliers" when referencing the box plots. It is not clear how outliers were identified for these data sets. Site samples with concentrations higher than the maximum background concentration should not be referred to as "outliers" without performing a statistical evaluation to support this conclusion. Please either remove these references to "outliers" or provide additional evidence that these samples are truly data set outliers.

11. **Page 22-23, Section 7.2.3:** Antimony – The text states that the IDEU data are higher than background "due to several non-detect values with high detection limits and detected values with high detection limits". While it may be true that the detected values also had high detection limits, because these values are detects, the high detection limits will not influence the distribution. Please remove "and detected values with high detection limits" from this sentence.

12. **Page 22-23, Section 7.2.3:** Manganese – The text states that concentrations in IDEU surface soil have "slightly higher confidence intervals" than background soils. The box plots do not present confidence intervals; they present the10th, 25th, 50th (median), 75th, 90th percentiles for the data sets. Please revise this sentence accordingly.

13. **Page 25, Section 7.2.4, 1st sentence:** The statement that IDEU surface soil data sets "have slightly elevated concentrations compared to the background data set" is subjective and should be revised to "have concentrations that are statistically higher than background".

14. **Page 26, Summary of EU-Wide Patter Recognition, 1st sentence:** Please include a citation for Shacklette and Boerngen (1984) to clarify the source of the Western US background data set.

15. **Page 27-45, Pattern Recognition:** As indicated in the General Comments, the comparison of site data to western US soils does not relate to pattern recognition and should be removed from this section. For several ECOIs, this section states that site concentrations are "within the range of reported literature values". Please change these statements to "within the range of Western US background values reported in Shacklette and Boerngen (1984)" to clarify the nature of these "reported literature values".

8

16. **Page 29, Antimony, Evaluation of Spatial Trends:** There is no evidence presented to support the conclusion that J- and B- qualified detects are "suspect". These qualifiers indicate that antimony is present above the detection limit in these samples, but the reported levels are estimated. Please revise the statement.

17. **Page 29, Antimony, Evaluation of Spatial Trends:** The text concludes that antimony concentrations in surface soil above the maximum background concentration are "dispersed across the site with no apparent pattern" (Figure 7.12). This conclusion is not supported by the spatial patterns presented in Figure 7.12. In this figure, antimony concentrations are not above the maximum background concentration in any sample from the West Area EU, the Rock Creek Drainage EU, the Southwest Buffer Area EU, the Southeast Buffer Area EU, the Windblown Area EU, the Lower Walnut Drainage EU, and most samples from the Upper and Lower Drainage EUs. When antimony concentrations exceed the maximum background concentration, the samples are usually from areas where site-related activities have occurred. Please revise statements regarding the spatial patterns for antimony accordingly.

18. **Page 30, Antimony, Conclusion:** EPA does not agree with the conclusion to eliminate antimony based on professional judgment at this stage of the screening process. Please retain antimony for further evaluation.

19. **Page 30, Arsenic:** Please clarify if the statement "EPA considers arsenic to be toxic even at background levels" is intended to apply to ecological receptors and, if so, provide a citation. If not, this statement should be removed.

20. **Page 30, Arsenic, Summary of Process Knowledge, 5th sentence:** This sentence is not clear as written, recommend changing this sentence to read as follows: "The ChemRisk report concluded that arsenic releases to the environment either did not occur or were minimal (CDH 1991a)."

21. **Page 31, Arsenic, Pattern Recognition, 2nd paragraph**: This paragraph illustrates the inherent problems with drawing conclusions based on reported ranges (minimum - maximum). This paragraph suggests that the maximum IDEU surface soil concentration of arsenic (17 mg/kg) could be a result of subsurface soils becoming mixed with surface soils due to excavation activities for the New Landfill. Arsenic concentrations in background subsurface soils are reported as ranging from 0.27 to 41.8 mg/kg. While a simple comparison of the maximum IDEU surface soil value (17 mg/kg) to the maximum subsurface soil value (41.8 mg/kg) appears to support the conclusion that the arsenic concentrations in IDEU surface soils are not higher than subsurface background soils, this conclusion is not supported by a more thorough evaluation. If the IDEU surface soil data set is compared to the background subsurface soil data set using the WRS test, the IDEU surface soil data set is statistically higher than the background subsurface soil data set ($p > 0.90$). This is because 98 of 99 subsurface soil samples have arsenic concentrations less than or equal to 10 mg/kg (mean = 3.4 mg/kg). This text should be revised to delete the argument that the maximum arsenic concentration in surface soil

9

may be a result of a redistribution of arsenic in subsurface soil due to earthmoving activities.

22. **Page 38, Lead, Evaluation of Spatial Trends, 2nd paragraph:** The text concludes that lead concentrations in surface soil above the maximum background concentration are "dispersed across the whole site with no apparent pattern" (Figure 7.17). This conclusion is not supported by the spatial patterns presented in Figure 7.17. In this figure, lead concentrations are not above the maximum background concentration in any sample from the West Area EU, the Rock Creek Drainage EU, the Southwest Buffer Area EU, the Southeast Buffer Area EU, the Lower Walnut Drainage EU, and most samples from the Upper and Lower Drainage EUs. When lead concentrations exceed the maximum background concentration, the samples are usually from areas where site-related activities have occurred. Please revise statements regarding the spatial patterns for lead accordingly.

23. **Page 43, Molybdenum, Evaluation of Spatial Trends:** There is no evidence presented to support the conclusion that B- qualified detects are "suspect". These qualifiers indicate that molybdenum is present above the detection limit in these samples, but the reported levels are estimated.

24. **Page 43, Molybdenum, Conclusion:** EPA does not agree with the conclusion to eliminate molybdenum based on professional judgment. Please retain molybdenum for further evaluation.

25. **Page 44, Tin, Evaluation of Spatial Trends:** There is no evidence presented to support the conclusion that B- qualified detects are "suspect". These qualifiers indicate that tin is present above the detection limit in these samples, but the reported levels are estimated.

26. **Page 45, Tin, Risk Potential for Plants and Wildlife:** This section states that 7 samples exceeded one or more ESLs, however, Figure 7.21 identifies only 1 sample (in the No Name Gulch Drainage EU) with concentrations above the minimum ESL. Please correct this discrepancy.

27. **Page 46, Section 7.4.2**: The conclusion should not be "frequency of detection was not further evaluated", it should be "no ECOIs were excluded based on the detection frequency evaluation".

Section 11.0 Uncertainties Associated with the Ecological Risk Assessment

28. **Page 54, 2nd paragraph**: This section implies that wildlife exposures from drinking water were evaluated quantitatively. Please clarify if there are ESLs that were used to identify ECOPCs for wildlife in drinking water.

29. **Page 54, 4th paragraph, 2nd to last sentence:** The statement that "ECOIs associated with the site...are in forms that may not be as readily absorbed by ecological receptors" is too broad. The statement is not likely to apply to organics, and is not likely to apply to

10

inorganic compounds in water and dietary items. Therefore, the text should be revised as follows: "Differences in relative bioavailability are not likely to be a major source of uncertainty for exposures to organics (in any medium) or to inorganics in water or dietary items, but could result in an overestimation of risk from oral exposure to inorganics in soil or sediment."

Section 12.0 Summary and Conclusions

30. **Page 56, Section 12.2:** Please add a conclusion sentence (similar to that presented for human health) which summarizes the overall risk conclusions for ecological receptors.

Tables

31. **Table 1.1.** Please add a column that identifies the chemicals of potential concern identified for each IHSS.

Figures

32. **Figure 1.4.** The colors (light green) used to identify leadplant riparian, riparian woodland, short upland shrubland, wet meadow/marsh ecotone, and the Xeric Tallgrass Prairie cannot be distinguished from one another. Please revise the figure to provide a clear distinction of these vegetation types. The colors (brown) used to designate the short marsh and tall upland shrubland should also be clarified.

Appendix A: Detection Limit Evaluation

33. **Page 2, Section 1.2:** It appears that the detection limit adequacy evaluation was only performed for analytes with no detects (detection frequency = 0%). A detection limit adequacy evaluation should be performed for any analyte with a detection frequency less than 5%. Please clarify which "nondetected" analytes were included in the detection limit adequacy evaluation. Add any additional analytes if necessary.

34. **Page 2, Section 2.0**: Please clarify what is meant by "Data were analyzed with a screening method". Please clarify why results that were flagged as having incorrect units were not corrected and retained in the CRAReady "Yes" data set. Please include the "CRAReasonCode" (as it appears in the database) for each of the reasons presented in this section.

Appendix B: Data Quality Assessment

35. This appendix (Data Quality Assessment) was not reviewed in detail. However a cursory review of the reported flagging percentages in this appendix supports the conclusion that the IDEU data quality is adequate for use in the CRA.

Appendix C: Statistical Analyses

//

36. **Page 2, Section 1.3, 2nd paragraph:** This section states that additional statistical evaluations will be performed for chemicals that fail the background screen but are deemed to be "very similar" to background. Please clarify how one data set is judged to be similar or dissimilar to another.

37. **Page 3, Section 1.5, 1st sentence**: Please revise this sentence to "In this appendix, box plots have been generated for all analytes that exceeded a PRG or ESL and were not statistically different from background."

MINOR COMMENTS

Page i-ii, Table of Contents – Check formatting (tab settings).

Page ii, Table of Contents – Section 7.0 page numbering is missing leader "……19"

Page v, Acronyms – Change "Ft" to "ft"

Page vi, Acronyms – Remove the hyphens from the definition for NOAEL

Page vi, Acronyms – Change "QAPjP" to "QAPP"

Page viii, Unit Descriptions – Change "Kg" to "kg"

Page viii, Unit Descriptions – Change "Mg" to "mg"

Page ES-2, 1st paragraph, 2nd full sentence – Change "The median concentrations of alumi

Page 1, 1st paragraph, last sentence – Change "(EU) (IDEU)" to "(IDEU)"

Page 2, 1st paragraph, 3rd sentence – Change "(NFA)CAD/ROD" to "(NFA) CAD/ROD"

Page 4, 1st paragraph, 1st sentence – Change "QAPjP" to "QAPP"

Page 19, Section 7.0, 1st sentence – Change "focusing the assessment of" to "focusing the assessment on"

Page 20, Section 7.0, 3rd full paragraph, 1st sentence – Change "the appropriate NOAEL ESL" to "the appropriate NOAEL PMJM ESL"

Page 20, Section 7.0, 3rd full paragraph, 2nd sentence – Change "If no ESL" to "If no PMJM ESL"

Page 27, Evaluation of Spatial Trends, 1st sentence – Change "WSF area(IHSS 168)" to "WSF area (IHSS 168)"

Page 28, Antimony, 2nd sentence – Change "Over a hundred" to "Over one hundred"

Page 31, Evaluation of Spatial Trends, 2nd paragraph, 1st sentence – Change "17-mg/kg" to "17 mg/kg"

Page 32, Barium, 5th sentence – Change "on many locations" to "due to anthropogenic activities"

Page 33, Boron, 1st paragraph – As written this paragraph has no relevance to RFETS. Please revise to include information on fate and transport of boron in the environment.

Page 37 – Insert a carriage return before the heading "Conclusion"

Page 38 – Insert a carriage return after the heading "Summary of Process Knowledge"

Page 39, Lead, Risk Potential to Plants and Wildlife – Change "(less than 2 times)" to "(by less than a factor of 2)"

Page 39, Lithium, 3rd sentence – As written this sentence has no relevance to RFETS. Please remove this sentence.

Page 42, Manganese, Risk Potential to Plants and Wildlife, 2nd sentence – Change "is overly conservative" to "may be conservative"

Page 42, Manganese, Risk Potential to Plants and Wildlife – Change "(less than 2 times)" to "(by less than a factor of 2)"

Page 44, Molybdenum, Risk Potential to Plants and Wildlife – Change "less than 2 times" to "by less than a factor of 2"

Page 45, Tin, Risk Potential to Plants and Wildlife – Change "less than 2 times" to "by less than a factor of 2"

Page 47, Section 7.4.3, 3rd paragraph, last sentence – Add a period to the end of the sentence.

Page 47, Mercury, 1st paragraph – Change "high percentage of nondetections" to "high percentage of non-detects"

Page 48, Mercury, 2nd sentence – Please delete this sentence.

Page 48, Mercury, Summary of Process Knowledge, 2nd sentence – Change "for the most part" to "mostly"

Page 49, 3rd paragraph, 2nd sentence – Change "release of these PCOCs to surface soil" to "release of mercury to subsurface soil"

Page 55, Section 11.2.3, 1st paragraph, last sentence – Change "following(Calabrese and Baldwin 1993)" to "following (Calabrese and Baldwin 1993)"

13

Page 56, Section 11.3, 1st sentence – Change "WAEU" to "IDEU"

Overall comment – The text is inconsistent in the presentation of the term "weight of evidence" (vs. "weight-of-evidence"). Please select one form and use it consistently.

Table 1.5 – The page footer is overlapping with the table footer

Table 7.5 – Change the definition of "N/A" to be "ESL not available or background comparison could not be performed"

Table 7.5 – Add a footnote to describe what is meant by "Limiting ESL"

Table 7.8 – Change "Exceeds Any NOAEL ESL" to "Exceeds Prairie Dog NOAEL ESL"

Appendix A, page 2, Section 1.2, last sentence – Change "All MaxDLs for…" to "When ESLs were available, all MaxDLs for…"

Appendix A, Table A.1 – Change "Not Available of Not Applicable" to "Not Available or Not Applicable" in the footnote

Appendix A, Table A.5 – Change "WAEU" to "IDEU" in the footnote

Appendix A, Table A.7 – Change "Nat Available" to "Not Available"

Appendix B, Acronyms – Change EDD definition from "electronic deliverable" to "electronic data deliverable"

Appendix C, Table C.4 – Add footnote "a" to the bottom of the table

14/14